Inside This Issue of JACC

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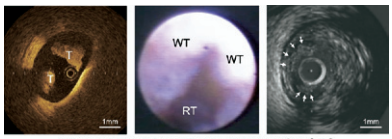

RT = red thrombus; T = thrombus with OTC signal attenuation; WT = white thrombus

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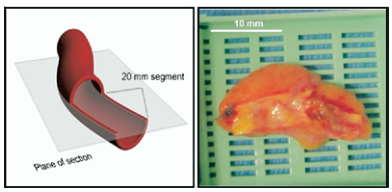
Atheroma Morphology

OCT Improves Ability to Detect Plaque Rupture

Optical coherence tomography (OCT) is an emerging intravascular imaging method with a spatial resolution of approximately 10 μm, which is 10 times sharper than intravascular ultrasound (IVUS). Kubo and colleagues studied plaque morphology in 30 patients with acute myocardial infarctions using 3 currently available intravascular imaging modalities: OCT, IVUS, and coronary angioscopy (CAS). The incidence of plaque rupture observed by OCT was 73%, compared to only 47% by CAS and 40% by IVUS. Optical coherence tomography was also superior for detecting fibrous cap erosion and intracoronary thrombus. The high spatial resolution of OCT may help us to understand the morphology of lesions that pose the highest risk for plaque rupture. **See page 933. See figure.**



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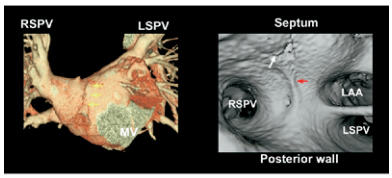
Atheroma Morphology

Longitudinal Coronary Artery Dissection Defines Frequency and Location of Vulnerable Plaque

Cheruvu and colleagues obtained 50 whole hearts from donors who died from a variety of conditions, 66% of which were thought to be cardiovascular. The coronary arteries were then dissected from the heart, longitudinally slit, and imaged. This technique allows for a continuous assessment of the distribution of lesions along the course of the arteries. In patients dying of cardiovascular causes, thin-capped fibrous atheroma and areas of ruptured plaque accounted for only 1.6% and 1.2%, respectively, of the total length of the coronary tree. The majority of these lesions were in the proximal third of the major coronary arteries. These findings imply that the precursors of rupture-mediated thrombosis occur in a limited, focal distribution in the coronary arteries, rather than systemically. **See page 940. See figure.**



LAA = left atrial appendage; L/RSPV = left/right superior pulmonary vein; MV = mitral valve

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Heart Rhythm Disorders

Bundles of Muscular Tissue in the Left Atrium May Impede the Success of Atrial Fibrillation Ablations

Although bundles of muscular tissue traveling through the left atrium have been known since 1920, they remain poorly understood. Chang and colleagues performed left atrial computed tomographic scans on patients referred for pulmonary vein isolation (PVI) in order to identify and characterize their electrophysical effects. The bundles were found in 28% of patients, and similar to the christa terminalis in the right atrium, they seemed capable of sustaining atrial flutter by providing a linear area of electrical block. Identifying these bundles and performing additional ablation lines near these bundles when necessary may improve the success of PVI. **See page 964. See figure.**

Peripheral Arterial Disease

Loss of Mobility Frequent in Patients With PAD

McDermott and colleagues studied the effect of peripheral arterial disease (PAD) in limiting patients' mobility. Almost 400 subjects with PAD, defined as an ankle-brachial index <0.90, were followed for 4 years, along with a control group. Subjects with PAD had a higher rate of mobility loss than persons without PAD, yet this difference was no longer statistically significant after adjustment for baseline performance. This study suggests that patients with PAD are at high risk of becoming mobility impaired and also suggests that the decline has started before PAD is diagnosed. **See page 974.**